

Machine Translation

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the optical information record medium of the postscript mold which has the record film containing especially organic coloring matter and which can be written in about an optical information record medium.

[0002]

[Description of the Prior Art] It has come to spread widely from the thing for which it has the outstanding description -- generally an optical information record medium has large storage capacity, and, moreover, record or playback is performed by non-contact.

[0003] In the optical disk (for example, WORM, CD-R) of a current postscript mold, it is made to reproduce by the difference between the amount of reflected lights of the part in which the very small area of record film is made to condense laser, a pit is formed in record film, and the pit section and a pit are not formed, or the amount of transmitted lights. And generally it is known well that organic coloring matter is used for the record film of this postscript type of optical recording medium.

[0004]

[Problem(s) to be Solved by the Invention] However, wavelength of semiconductor laser will be made shorter than present with increase of amount of information from now on, and the attempt which performs high density record will come to be made. The problem that sufficient sensibility is not obtained without the reflection factor and absorption sufficient in the cyanine dye conventionally used for the optical recording medium of a postscript mold for the 635-650nm neighborhood which is the wavelength of the laser used for high density record has arisen. Moreover, the motion which recycles the recording layer solution at the time of optical-recording-medium manufacture has become active for the cost cut, and the coloring matter which has properties, such as that coloring matter with the high solubility to a solvent is desirable, and manufacture of coloring matter itself is easy, that a molar extinction coefficient is high and film production nature is excellent, and excelling in lightfastness, is called for in recent years. This invention is made in view of such a situation, the purpose of this invention is suitable also for the high density record using the semiconductor laser which has oscillation wavelength in short wavelength, and sensibility is to offer the optical information record medium which was highly excellent in the solubility to a solvent.

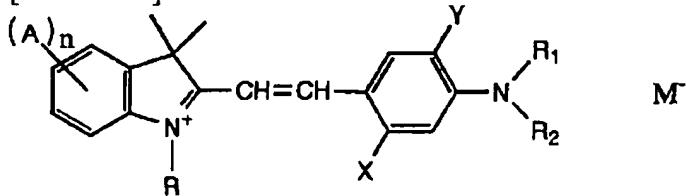
[0005]

[Means for Solving the Problem] this invention persons completed this invention, as a result of trying hard wholeheartedly that a technical problem which was described above should be solved. Namely, the optical information record medium characterized by this invention having a recording layer containing the basic dye which (1) basicity heterocycle radical and aniline residue have combined through a joining chain, (2) An optical information record medium given in (1) whose a basic heterocycle radical is a basic heterocycle radical which has the 4th class nitrogen atom, (3) An optical information record medium given in (2) whose basic heterocycle radical which has the 4th class nitrogen atom is an India renin ring machine or a naphth INDO renin ring machine, (4) An optical information record medium

given in any 1 term of (1) thru/or (4) an optical information record medium given in any 1 term of (1) thru/or (3) which the joining chain has combined with the p-th place of aniline residue, and whose (5) joining chains are an azo joint radical or a vinyl joint radical, and (6) basic dye are the following type (1).

[0006]

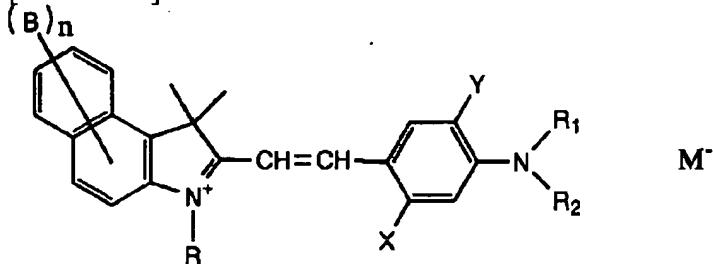
[Formula 3]



[0007] a formula (1) -- setting -- A -- the alkyl group which is not permuted [a hydrogen atom, a halogen atom, a permutation, or] -- The alkoxy group which is not permuted [the aryl group which is not permuted / a permutation or /, an acyl group, a permutation, or] is expressed. n expresses the integer of 1 to 4. R The aryl group which is not permuted [a hydroxyl group, a permutation, or], The alkyl group which is not permuted [the alkenyl radical which is not permuted / the alkyl carbonylamino radical which is not permuted / a permutation or /, a permutation, or /, a permutation, or] is expressed. X The alkyl group which is not permuted [a hydrogen atom, a permutation, or], a formylamino radical, The alkyl carbonylamino radical which is not permuted [a permutation or], a benzoylamino radical, or a halogen atom is expressed. Y expresses the alkoxy group or halogen atom which is not permuted [the alkyl group which is not permuted / a hydrogen atom, a permutation, or /, a permutation, or]. R1 and R2 Expressing independently the aryl group which is not permuted [the alkenyl radical which is not permuted / the alkyl group which is not permuted / a hydrogen atom, a permutation, or /, a permutation, or /, a permutation, or], respectively, M expresses an anion. Or the following type (2)

[0008]

[Formula 4]



[0009] (In a formula (2), B expresses the alkoxy group which is not permuted [the aryl group which is not permuted / the alkyl group which is not permuted / a hydrogen atom, a halogen atom, a permutation, or /, a permutation or /, an acyl group a permutation, or], respectively.) Moreover, in a formula (2), R, R1, R2, and X, Y, M and n are the same as the above.

(7) An optical information record medium given in (6) either [at least / whose] X or Y is the compound which has substituents other than a hydrogen atom, (8) R1 and R2 (6) at least whose one side is the compound which has the aryl group which is not permuted [a permutation or], or an optical information record medium given in (7), (9) (1) whose basic dye is the compound which has absorption maximum in within the limits with a wavelength of 520-600nm thru/or an optical information record medium given in any 1 term of (8), (10) An optical information record medium given in claim 1 characterized by containing 1-fold term oxygen quencher in a recording layer thru/or any 1 term of 9, (11) It is related with an optical information record medium given in any 1 term of (1) thru/or (10) which it has a metallic reflective layer and a protective layer on a recording layer, and this metallic

reflective layer uses gold, silver, or the aluminum as a principal component, and is characterized by this protective layer consisting of ultraviolet curing mold resin.

[0010]

[Embodiment of the Invention] The optical information record medium of this invention is characterized by containing the basic dye which a basic heterocycle radical and aniline residue have combined through a joining chain in a recording layer. As a joining chain, azo association and vinyl association are raised, for example. The various anilines of the 1st class, the 2nd class, and the 3rd class are contained with the aniline with which aniline residue may have the substituent in the benzene frame. As for the joining chain combined with aniline residue, it is desirable to have combined with the p-th place of the amino group.

[0011] The basic heterocycle radical which constitutes the basic frame of the basic dye used by this invention has a nitrogen atom in a heterocycle radical, and the nitrogen atom is formed into 4 class. As a heterocycle radical, although a thiazole ring radical, a benzothiazole ring machine, a naphth thiazole ring radical, a benzoISOCHI azole ring machine, an India renin ring machine, a naphth INDO renin ring machine, a benzooxazole ring machine, an imidazole ring radical, a benzimidazole ring machine, a pyridine ring machine, a pyrazine ring machine, a pyrimidine ring machine, a quinoline ring machine, a quinoxaline ring machine, a quinazoline ring radical, etc. are raised, for example, an India renin ring machine and a naphth INDO renin ring machine are desirable.

[0012] As that of the desirable basic dye used by this invention, the compound shown, for example by the above-mentioned general formula (1) or (2) is mentioned.

[0013] A general formula (1), and A, B, X, Y, R and R1 of (2) And R2 It sets and the shape of a straight chain and the branched-chain alkyl group of C1-C6 is raised as a non-permuted alkyl group, for example. As a permutation alkyl group, a hydroxy permutation alkyl group, a carboxy permutation alkyl group, a cyano permutation alkyl group, an amino permutation alkyl group, a halogen atom permutation alkyl group, a phenyl permutation alkyl group, an alkoxy permutation alkyl group, an alkoxy alkoxy permutation alkyl group, an acyloxy radical permutation alkyl group, an aminocarbonyl alkyl group, a heterocycle permutation alkyl group, the alkoxy carbonyl permutation alkyl group that may be permuted, the alkoxy carbonyloxy permutation alkyl group which may be permuted are raised, for example.

[0014] As a hydroxy permutation alkyl group, for example 2-hydroxyethyl radical, 3-hydroxypropyl radical, 4-hydroxy butyl, 2-hydroxypropyl radical, etc. are raised. As a carboxy permutation alkyl group A carboxymethyl radical, 2-carboxy ethyl group, 3-carboxy propyl group, etc. are raised. For example, as a cyano permutation alkyl group 2-cyano ethyl group etc. is raised. For example, as an amino permutation alkyl group 2-aminoethyl radical etc. is raised. For example, as a halogen atom permutation alkyl group For example, 2-chloro ethyl group, 3-chloropropyl radical, 2-chloropropyl radical, 2, 2, and 2-trifluoroethyl radical, a tetrafluoro propyl group, etc. are raised, and benzyl, 2-phenylethyl radical, 3-phenylpropyl radical, etc. are raised as a phenyl permutation alkyl group, for example.

[0015] As an alkoxy permutation alkyl group, for example 2-methoxy ethyl group, 2-ethoxyethyl radical, a 2-(n) propoxy ethyl group, a 2-(iso) propoxy ethyl group, A 2-(n) butoxy ethyl group, a 2-(iso) butoxy ethyl group, 2-(2-ethylhexyloxy) ethyl group, 3-methoxy propyl group, 4-methoxy butyl, 2-methoxy propyl group, etc. are raised. As an alkoxy alkoxy permutation alkyl group For example, 2-(2-methoxyethoxy) ethyl group, 2-(2-ethoxy ethoxy) ethyl group, 2-(2-(n) propoxyethoxy) ethyl group, 2-(2-(iso) propoxyethoxy) ethyl group, 2-(2-(n) butoxyethoxy) ethyl group, 2-(2-(iso) butoxyethoxy) ethyl group, a 2-{2-(2-ethylhexyloxy) ethoxy} ethyl group, etc. are raised.

[0016] As an acyloxy radical permutation alkyl group, 2-acetyloxy ethyl group, 2-propionyloxy ethyl group, a 2-(n) butyryloxy ethyl group, 2-(iso) butyryloxy ethyl group, 2-trifluoroacetyloxyethyl group, a benzoyloxy ethyl group, etc. are raised, for example, as an aminocarbonyl alkyl group, an aminocarbonyl ethyl group, an aminocarbonyl propyl group, etc. are raised, for example, and a furfuryl radical, a tetrahydrofurfuryl radical, etc. are raised as a heterocycle permutation alkyl group, for example.

[0017] As an alkoxy carbonyl permutation alkyl group which may be permuted For example, a methoxy

carbonylmethyl radical, an ethoxy carbonylmethyl radical, (n) A propoxy carbonylmethyl radical, a propoxy (iso) carbonylmethyl radical, (n) A butoxy carbonylmethyl radical, a butoxy (iso) carbonylmethyl radical, 2-ethylhexyloxy carbonylmethyl radical, a benzyloxy carbonylmethyl radical, A furfuryl oxy-carbonylmethyl radical, 2-methoxy carbonylethyl radical, A 2-ethoxy carbonylethyl radical, (n) propoxy carbonylethyl radical, A propoxy carbonylethyl radical, (n) butoxy carbonylethyl radical, (iso) (iso) A butoxy carbonylethyl radical, 2-(2-ethylhexyloxy carbonyl) ethyl group, a 2-benzyloxy carbonylethyl radical, 2-furfuryl oxy-carbonylethyl radical, etc. are raised.

[0018] As an alkoxy carbonyloxy permutation alkyl group which may be permuted For example, 2-methoxycarbonyloxy ethyl group, 2-ethoxycarbonyloxy ethyl group, A 2-(n) propoxycarbonyloxy ethyl group, 2-(iso) propoxycarbonyloxy ethyl group, A 2-(n) butoxycarbonyloxy ethyl group, 2-(iso) butoxycarbonyloxy ethyl group, 2-(2-ethylhexyloxy carbonyloxy) ethyl group, 2-benzyloxycarbonyl oxy-ethyl group, 2-furfuryl oxy-carbonyloxy ethyl group, etc. are raised.

[0019] A, B, R, and R1 And R2 A naphthyl group with the phenyl group which sets and has a phenyl group and a substituent as an aryl group, for example, a naphthyl group, and a substituent etc. is raised. As a substituent combined with a phenyl group, alkoxy groups (C1-C4), such as alkyl groups (C1-C4), such as a fluorine atom, a chlorine atom, a methyl group, and an ethyl group, a cyano group, a hydroxy group or a methoxy group, and an ethoxy radical, etc. are raised, for example. Moreover, in A, B, X, and Y, a fluorine atom, a chlorine atom, and a bromine atom are raised as a halogen atom, for example. Furthermore, R and R1 And R2 It sets and C3, such as an allyl group, a butenyl group, and a cinnamyl radical, - C9 alkenyl radical are raised as an alkenyl radical which is not permuted [a permutation or], for example.

[0020] In X and R as an alkyl carbonylamino radical which is not permuted [a permutation or] For example, an acetyl amino radical, a propionyl amino radical, (n) butyryl amino group, The butyryl amino group, a trifluoroacetyl amino radical, etc. are raised. (iso) As an alkoxy carbonylamino radical which is not permuted [a permutation or] For example, a methoxycarbonylamino radical, an ethoxycarbonylamino radical, (n) A propoxy carbonylamino radical, a propoxy (iso) carbonylamino radical, (n) A butoxycarbonylamino radical, a butoxycarbonylamino (iso) radical, a benzyloxycarbonylamino radical, a furfuryl oxy-carbonyl-amino radical, a tetrahydrofurfuryl oxy-carbonyl-amino radical, etc. are raised.

[0021] In A, B, and Y as an alkoxy group For example, a methoxy group, an ethoxy radical, the (n) propoxy group, a propoxy group (iso), (n) Alkoxy groups (C1-C8), such as a butoxy radical, a butoxy (iso) radical, and 2-ethylhexyloxy radical, are raised. These radicals may have the substituent. For example, 2-chloroethoxy radical, A 2-methoxyethoxy radical, a 2-ethoxy ethoxy radical, a 2-(n) propoxyethoxy radical, 2-(iso) propoxyethoxy radical, a 2-(n) butoxyethoxy radical, 2-(iso) butoxyethoxy radical, a 2-benzyloxy ethoxy radical, 2-furfuryl oxyethoxy radical, 2-tetrahydrofurfuryl oxyethoxy radical, a tetrahydrofurfuryl oxy-radical, a furfuryl oxy-radical, etc. are raised. Moreover, n expresses the integer of 1 to 4 and is 1 or 2 preferably.

[0022] As an anion of M, an organic-acid anion, an inorganic anion, a transition metal complex anion, etc. are raised, for example. As an organic-acid anion, for example Acetic-acid ion, lactic-acid ion, trifluoroacetic acid ion, Propionic-acid ion, benzoic-acid ion, an oxalate ion, succinic-acid ion, Organic carboxylic-acid ion, such as stearin acid ion, methansulfonic acid ion, Toluenesulfonic acid ion, naphthalene mono-sulfonic-acid ion, chlorobenzene sulfonic-acid ion, Nitrobenzene sulfonic-acid ion, the dodecylbenzenesulfonic acid ion, Organic sulfonic-acid ion, such as benzenesulfonic acid ion, ethane-sulfonic-acid ion, and trifluoro methansulfonic acid ion, Organic boric-acid ion, such as tetraphenyl borate ion and butyl triphenyl boric-acid ion, etc. is raised. Preferably Halogeno alkyl sulfonic-acid ion, such as trifluoro methansulfonic acid ion and toluenesulfonic acid ion, or alkylarylsulfonic acid ion is raised.

[0023] As a transition metal complex anion, nickel complex of a benzene dithiol derivative, nickel complex of a naphthalene dithiol derivative, nickel complex of an ethene dithiol derivative, etc. are raised.

[0024] As an inorganic anion, for example Fluorine ion, a chlorine ion, bromine ion, Halogen ion, such

as iodine ion, thiocyanic acid ion, 6 antimony-fluoride acid ion, Perchloric acid ion, periodic acid ion, nitrate ion, tetrafluoroboric acid ion, Hexa fluorophosphoric acid ion, molybdic-acid ion, tungstic-acid ion, Titanic-acid ion, vanadium acid ion, phosphoric-acid ion, boric-acid ion, etc. are raised. As a desirable thing Ion with comparatively large molecular weight, such as perchloric acid ion, iodine ion, tetrafluoroboric acid ion, hexa fluorophosphoric acid ion, and hexafluoro antimonic acid ion, is raised. [0025] The basic dye used by this invention has an organic or inorganic anion. Although especially an anion does not have a limit, it is desirable that basic dye is insolubility substantially at water, therefore an anion which makes basic dye water-insoluble nature substantially is desirable. As a desirable anion, ion with comparatively large molecular weight, such as halogeno alkyl sulfonic-acid ion, such as trifluoro methansulfonic acid ion and toluenesulfonic acid ion, or alkylarylsulfonic acid ion, perchloric acid ion, iodine ion, tetrafluoroboric acid ion, hexa fluorophosphoric acid ion, and hexafluoro antimonic acid ion, is raised, for example.

[0026] A general formula (1) and the desirable thing of (2) have a hydrogen atom, a halogen atom (a chlorine atom or fluorine atom), and desirable A1 (C1-C4) 4 alkyl group in A and B as a substituent, in a general formula (1), the 5th place of a permutation location is desirable, and the 6th place is desirable about a general formula (2). In addition, a permutation location makes the nitrogen atom of an indoline frame No. 1, and numbers in the counterclockwise direction.

[0027] In R, an alkyl group (C1-C4 </SUB>), a hydroxyl group, an aryl group, and an alkyl (C2-C4) carbonylamino radical are desirable, and it is R1 and R2. It sets and an alkyl group (C1-C6), a hydroxyethyl radical, a cyano ethyl group, a chloro ethyl group, a phenyl alkyl group, an alkoxyalkyl group (C2-C8), an aryl group, and an allyl group are desirable. Especially, it is R1. And R2 If it has the aryl group which is not permuted [a permutation and] at least in one side, improvement in lightfastness will be found and a good ** 4 alkoxy phenyl group, an alkylphenyl (C1-C4) radical, etc. will be raised further.

[0028] Moreover, in X, a hydrogen atom, an alkyl (C2-C4) carbonylamino radical, an alkoxy carbonylamino (C2-C5) radical, an alkyl group, a formylamino radical, and a halogen atom (especially a chlorine atom or a fluorine atom) are desirable, and an alkoxy group (C1-C4), an alkyl group, a hydrogen atom, and a halogen atom (especially a chlorine atom or a fluorine atom) are desirable in Y. Furthermore, as for n, 1 or 2 is desirable.

[0029] as a desirable combination of these substituents -- A -- a hydrogen atom and R -- a methyl group and X -- a hydrogen atom or a methyl group, and Y -- a hydrogen atom, R1, and R2 an alkyl group, an allyl group, a hydroxyethyl radical or a phenyl (C1-C3) alkyl group, and M are [perchloric acid ion, tetrafluoroboric acid ion, hexa fluorophosphoric acid ion or hexafluoro antimonic acid ion, and n] 1 or 2, respectively (C1-C4) -- etc. -- an example is given.

[0030] As a concrete example of this combination, a hydrogen atom and R, for example Furthermore, a methyl group, [A] X is a hydrogen atom and Y is a hydrogen atom, R1, and R2. An alkyl group (C1-C4) or an ARIRU radical, For M, ** 4 alkyl group and M are [perchloric acid ion and n] 1 with perchloric acid ion, or, for a methyl group and X, a methyl group and Y are [A / a hydrogen atom and R] a hydrogen atom and R1 as another example. An alkyl group (C1-C4) and R2 An aryl group and M are perchloric acid ion.

[0031] this invention -- although the example of the compound shown in Table 1 by the general formula (2) in the example of the compound shown by the general formula (1) to kick is shown in Table 2, it is not limited to these. Among Table 1, toluenesulfonic acid ion and Ph express a phenyl group, and, as for Thf, TsO expresses a tetrahydrofuran ring. In addition, the number in A in Table 1 and B in Table 2 is a number which shows a permutation location, makes the nitrogen atom of an indoline frame No. 1, and numbers in the counterclockwise direction.

[0032]

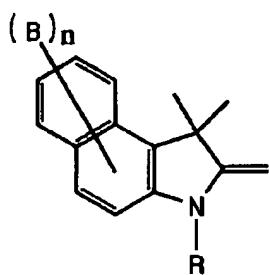
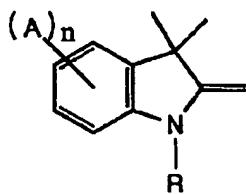
Table 1No. A R X Y R1 R2 M-1-1 H CH3 H H CH3 (p-Ph) OC2H5 ClO4- 2 H CH3 CH3 H CH3 CH2Ph ClO4- 3 5-C1 CH3 H H CH3CH2CH2OH ClO4- 4 5-C1 CH3 CH3 H CH3 CH2CH2CNC1O4- 5 HCH3CH3 HC2H5 C2H5 ClO4- 6 H CH3 H H C2H5 C2H5 ClO4- 7 5-C1CH3 H H CH3 CH2CH2Ph TsO- 8 HCH3 HH C2H5 CH2CH2Cl ClO4- 9 H CH3CH3 H C2H5 CH2CH2Cl ClO4-10 H CH3 H H

C2H5 CH2CH2OH ClO4-11 HCH3H H C2H5 C2H4OC2H5ClO4-12 5-C1 CH3 H H CH3CH3 ClO4-13
 5-C1 CH3NHCOPH3 H C2H4OCOPH3 CH2CH2OCOPH3 ClO4-14 5-C1 CH3 CH3 H CH2CH2OCH3
 CH2CH2OCH3 ClO4-15 5-C1 CH3 CH3 H C2H5 C2H5 TsO-16 5-C1 CH3 CH3 H C4H9 (n) C4H9(n)
 ClO4-17 H CH3 H H CH3 CH3 ClO4-18 5-C1 CH3 CH3 H C2H5 C2H5 TsO-19 H C2H4CN CH3 H
 CH2CH2OCH3CH2CH2OCH3 PF6-20 5-C1 CH3 NHCOCH3 H C4H9 (n) C4H9 (n) PF6-[0033]
 21 5-C1 CH3 NHCOCH3 H C4H9(n) C8H17(n) PF6- 22 H CH3 CH3 H CH3 CH2Ph SbF6- 23 5-C1
 CH3 NHCOCH3 H C4H9(n) CH2CH2COOH PF6- 24 5-COCH3 CH3 NHCOCH3 H C4H9(n)
 CH2CH2CN PF6-25 5-COCH3 CH3 NHCOCH3 H C4H9 (n) CH2CH2NH2 PF6-26 HCH3H
 HCH2CH2CN CH2Ph ClO4-27 5-CH3 CH3 NHCOCH3H C4H9 (n) CH2CH2Ph PF6-28 5-C1 CH3
 NHCOCH3 H C4H9 (n) CH2CH2OCH3 SbF6-29 6-C1 OH NHCOCH3 H C4H9 (n) (CH2CH2O) 2CH3
 PF6-30 H C2H5OCH3 H H CH2CH2CN CH2Ph ClO4-31 5-CH3 CH3 NHCOCH3 H C4H9 (n)
 CH2CH2COOCH3SbF6-32 5-C1 CH3 CH3 HC2H4COOCH3 CH2CH2COOCH3 BF4-33 H CH3
 NHCOCH3 H C4H9 (n) CH2Thf ClO4-34 H OH CH3 H C2H5 C2H5 ClO4-35 H OH H H C4H9 (n)
 C4H9 (n) PF6-36 H CH3 NHCHO H C2H5 C2H5 I-37 H C2H4CN NHCOPh H CH3 CH2CH2OH I-38
 H CH3 NHCOCF3 HC2H5 C2H5 I-39 H CH3 NHCOOCH3 H C4H9 (n) C4H9 (n) ClO4-40 H OH
 NHCOOCH3 H C2H5 C2H5 SbF6-[0034]
 41 5-OCH3 CH3 NHCOOCH3 H C4H9(n) C4H9(n) ClO4- 42 5-OCH3 CH3 Cl H C4H9(n) C4H9(n)
 BF4- 43 5-OCH3 CH3 F H C2H5 CH2CH2OPh I- 44 5-OCH3 CH3 H CH3 C2H5 C2H5 I-45 5-OCH3
 CH3 H OCH3 C4H9 (n) C4H9 (n) ClO4-46 5-CH3CH3 H OC4H9(n) C2H5 C2H5 SbF6-47 5-Ph CH3
 H OCH2CH2C1C2H5 CH2CH2OH I-48 5-CH3CH3 H OC2H4OCH3 C2H5 C2H5 I-49 5-CH3 CH3 H
 OCH2Thf C4H9(n) C4H9 (n) I-50 5-CH3 CH3 CH3 Cl C2H5 C2H5 ClO4-51 6-Br OH CH3 H C4H9
 (n) CH2 CH=CH2 PF6-52 5-Br CH3 CH3 HC4H9(n) Ph BF4-53 5-CH3 CH3 CH3 H C4H9(n) PhCH3
 ClO4-54 5-CH3 CH3 CH3 H C2H5 H TsO-55 5-CH3 CH3 CH3 H C2H5 C2H5 SbF6-56 5-C2H5 CH3
 H H C4H9(n) C4H9 (n) BF4-57 5-C2H4OCH3 CH3 CH3 H C4H9(n) C4H9 (n) BF4-58 5-C2H4OCH3
 CH3CH3 H C2H5 C2H5 TsO-59 5-Cl, 6-Cl CH3 H H CH3 CH2CH2OH ClO4-60 5-Cl, 6-Cl CH3 CH3
 H C2H5 C2H5 ClO4-[0035]

Table 2 No. B R X Y R1 R2 M-2-1 H CH3 H H CH3 CH3 ClO4- 2 H CH3 H H C2H5 CH2CH2OH
 ClO4- 3 H CH3 NHCOCH3 H C2H5 C2H5 SbF6- 4HCH3 NHCOCH3 HC2H5 CH2CH2Ph SbF6- 56-
 Cl CH3CH3 HCH3 CH2CH2CN ClO4- 6 H CH3H H CH2CH2OCH3 CH2CH2OCH3ClO4- 7 6-Ph
 CH3 CH3 H C4H9 (n) C4H9 (n) PF6- 8 6-C2H5 CH3 CH3 H C4H9 (n) C4H9 (n) ClO4- 9 6-OCH3
 CH3 CH3 H C4H9 (n) C4H9 (n) ClO4-10 H CH3 H H CH3 CH2CH2OH ClO4-11 H CH3NHCOPH3
 H C4H9 (n) C4H9 (n) BF4-12 6-Cl CH3 CH3 H C2H5 CH2CH2OC2H5 ClO4-13 6-C1 CH3 C4H9 (n)
 H C2H5 C2H5 PF6-14 5-C1 CH3 H C4H9 (n) C2H5 C2H5ClO4-15 6-C1 CH3 H C4H9 (n) C2H5 C2H5
 ClO4-[0036] the compound of this invention expressed with the above-mentioned general formula (1) or
 (2) -- a formula (3) -- or (4) --

[0037]

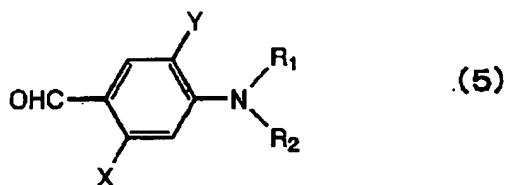
[Formula 5]



[0038] The indoline derivative and formula (5) which are come out of and expressed

[0039]

[Formula 6]



[0040] It comes out and 0-80 degrees C of benzaldehyde derivatives expressed are preferably obtained among a solvent by carrying out a condensation reaction at 5-30 degrees C preferably under existence of strong acid, such as perchloric acid, fluoroboric acid, and p-toluenesulfonic acid, among an acetic acid, an acetic anhydride, or the acid medium of both mixed solvent middle class. When exchanging counter ions, the solvent which can dissolve the acid corresponding to the reaction mixture or its salt, and the coloring matter which dissolved in the acetic anhydride or the acetic acid preferably, and added, or was once taken out can be dissolved in water, such as alcohol, DMF, and an acetic acid, into a meltable solvent or the mixed solvent of them and water, and it can compound by the approach of adding the desired acid or desired salt of an anion, and performing salt exchange.

[0041] Even if it uses independently, the compound used in the optical recording medium of this invention may be used together with coloring matter other than the compound used by this invention, for example, the coloring matter with which absorption wavelength differs, and the organic coloring matter which has the maximum absorption wavelength in 670 thru/or 740nm preferably, and may be used. as such coloring matter -- for example, pentamethine cyanine system coloring matter, SUKUWARIRIJUMU system coloring matter, India aniline system coloring matter, phthalocyanine system coloring matter, and azo dye -- cyanine dye, phthalocyanine dye, azo metal chelate coloring matter, etc. of pentamethine are raised more preferably.

[0042] Moreover, the anti-oxidant of the versatility for the improvement in reading endurance or light-fast improvement, an ultraviolet ray absorbent, and a singlet oxygen quencher may be used together. As a singlet oxygen quencher, transition metal complexes, such as a common nickel complex and a copper

complex, the nitroso compound of a diphenylamine, an aminium system, or a G MONIUMU system compound (for example, Nippon Kayaku make IRG-002, IRG-022, IRG-023 grade) is raised, for example. Moreover, various resin may be used together. Generally 0.01-10 mols of 0.03-2.0 mols of quenchers are preferably used to one mol of compounds of a general formula (1).

[0043] The optical information record medium of this invention is what prepared the recording layer containing the basic dye which a basic heterocycle radical and aniline residue have combined through a joining chain on a substrate, and the compound preferably expressed with a general formula (1) or (2), and a reflecting layer and a protective layer are prepared if needed. As a substrate, a known thing can be used for arbitration. For example, a glass plate, a metal plate, a plastic sheet, or a film is raised, and acrylic resin, polycarbonate resin, methacrylic resin, polysulfone resin, polyimide resin, amorphous polyolefin resin, polyester resin, polypropylene resin, etc. are raised as plastics. If attached to the configuration of a substrate, various things, such as the shape of the shape of the shape of a disk and a card and a sheet and a roll film, are raised.

[0044] In order to make the tracking at the time of record easy, a guide rail may be made to form on glass or a plastic plate. Moreover, under-coating layers, such as a plastics binder or an inorganic oxide, and inorganic sulfide, may be prepared in glass or a plastic plate, and, as for an undercoating layer, what has low thermal conductivity is more desirable than a substrate.

[0045] The recording layer in this invention can dissolve a quencher in a well-known organic solvent (TFP), for example, tetrafluoro propanol, an octafluoro pentanol (OFP), diacetone alcohol, a methanol, ethanol, a butanol, methyl cellosolve, ethylcellosolve, a dichloroethane, an isophorone, a cyclohexanone, etc. if needed [the compound and if needed] which are expressed with a general formula (1) or (2), can add a suitable binder if needed, and can obtain it by applying the solution on a substrate by the spin coater, the bar coating machine, a roll coater, As the other approaches, it can obtain also by the dipping method which soaks vacuum evaporation technique, the sputtering method, a doctor blade method, the cast method, or a substrate into a solution.

[0046] 0.01 micrometers - 5 micrometers of thickness of a recording layer are 0.02 micrometers - 3 micrometers preferably. When this value is less than 0.01 micrometers, record sensibility and reflection factors run short, and ideal record becomes impossible. On the other hand, when this value exceeds 7 micrometers, un-arranging [that record sensibility runs short] may arise.

[0047] As occasion demands, an undercoating layer can be prepared in the bottom of a recording layer, and a protective layer can be prepared on a recording layer at the optical information record medium of this invention, and a reflecting layer can be further prepared between a recording layer and a protective layer. When preparing a reflecting layer, preferably, gold, silver, copper, aluminum, etc. consist of gold, silver, or a metal of aluminum, and a reflecting layer may use them independently, and is good also as two or more sorts of alloys. This thing is formed by vacuum evaporation technique, the sputtering method, the ion plating method, etc. The thickness of such a reflecting layer is 0.02-2 micrometers. Generally, after painting ultraviolet-rays hardening resin with a spin coat method, the protective layer by which have been prepared on a reflecting layer irradiates ultraviolet rays, stiffens a paint film, and is formed. In addition, an epoxy resin, acrylic resin, silicone resin, urethane resin, etc. are used for the formation ingredient of a protective coat. The thickness of such a protective coat is usually 0.01-100 micrometers.

[0048] The optical information record medium of this invention is preferably used for DVD-R. Informational record or formation of an image lets a substrate pass for the high energy beam of the shape of a spot which condensed [laser / laser, for example, semiconductor laser, He-Ne laser, helium-Cd laser, an YAG laser, / Ar]. Or it is carried out by irradiating a recording layer from a substrate and the opposite side, and read-out of information or an image is performed by irradiating the laser beam of low-power output by detecting the difference of the amount of reflected lights of the part in which the pit section and a pit are not formed, or the amount of transmitted lights.

[0049]

[Example] Hereafter, although an example explains this invention concretely, this invention is not limited to these examples. In addition, among an example, especially the section expresses the weight

section, unless it limits.

[0050] It is 5-chloro in the solvent of the synthetic example 1 acetic-anhydride 0.08 section. - The 1, 3, and 3-trimethyl-2-methylene indoline 8.24 section is added, the N-(4-ethoxy phenyl)-N-methylamino-p-benzaldehyde 11.8 section is added further, and it agitates for several minutes at a room temperature. In addition in this liquid, it agitates at a room temperature, being careful of the solution which added the perchloric acid 4.18 section in the acetic-anhydride 21.6 section 60% under cooling. The water 2500 section was added after that and the compound of No.1-1 was obtained as a low-red-heat crystal by rinsing and drying with the water of after [churning] filtration, and the 320 sections at a room temperature overnight.

lambda max 540nm (methanol) Decomposition temperature 239 degrees C (TG-DTA)

Solubility to TFP: 10wt% Molar extinction coefficient: 8.1×10^4 [0051] Except having changed the aldehyde derivative of the example 1 of the synthetic example 2 above-mentioned composition into the 4-{N-benzyl-N-methylamino}-2-methyl benzaldehyde, it compounded similarly and the compound of No.1-2 was obtained as a low-red-heat crystal.

lambda max 553nm (methanol) Decomposition temperature 231 degrees C (TG-DTA)

Solubility to TFP: 12wt% Molar extinction coefficient: 1.1×10^5 [0052] It is compoundable by compounding the indoline derivative which corresponds like [examples / of a compound / other] the above-mentioned synthetic example 1, and making the benzaldehyde derivative corresponding to it react.

[0053] Example 1 (example of a record medium)

The compound 0.08 section of No.1-1 obtained in said synthetic example 1 was dissolved in the tetrafluoro propanol 4 section, and coating liquid was obtained. 2ml of this solution was dropped with the pipet on the 5 inch polycarbonate resin substrate with a groove, it dried for 5 minutes at spreading and 50 degrees C by the spin coater, and the recording layer was formed. The maximum absorption wavelength of the spreading film was 543nm. Gold was formed by the sputtering method on the obtained spreading film, and it considered as the reflecting layer. When semiconductor laser light with a main wavelength of 635nm was irradiated with the output of 9mW at this spreading substrate, the pit where a profile is clear was formed. Furthermore, when it irradiated and semiconductor laser light with a main wavelength of 635nm estimated on the record frequency of 1MHz, rotating this spreading substrate by 3.8 m/s, 45% of reflection factors and C/N ratio 56db were obtained. 20 days or more of the preservation stability of this spreading film were good under the conditions of 60 degree-CX80%RH.

[0054] Example 2 (example of a record medium)

The recording layer was formed by the approach performed in said example 1 using the compound of No.1-2 obtained in said synthetic example 2. The maximum absorption wavelength of the spreading film was 528nm. The reflecting layer was prepared in the obtained spreading film like the example 1, and when semiconductor laser light with a main wavelength of 635nm was irradiated with the output of 11mW, the pit where a profile is clear was formed. Furthermore, when it irradiated and semiconductor laser light with a main wavelength of 635nm estimated on the record frequency of 1MHz, rotating this spreading substrate by 3.8 m/s, 62% of reflection factors and C/N ratio 42db were obtained. 20 days or more of the preservation stability of this spreading film were good under the conditions of 60 degree-CX80%RH.

[0055] Example 3 (photostability testing-proof)

The compound 0.1 section of No.1-1 obtained by the tetrafluoro propanol 10 section in said example 1 was dissolved, and coating liquid was created. The spin coat of the obtained coating liquid was carried out to the polycarbonate substrate, and the coloring matter film was created. The obtained coloring matter film was put into the Suga Test Instruments ultraviolet-rays long life carbon arc fading-test machine (black panel temperature of 63 degrees C), light was irradiated from the substrate side, and photostability testing-proof was performed in 5 hours, 10 hours, and 20 hours. Then, the survival rate of coloring matter was measured with the spectrophotometer. A result is shown in Table 3.

[0056]

Table 3 (photostability testing-proof)

- The survival rate of coloring matter (%)

First stage 5h after 10h after 20h after sample 1-1 100 88 82 72 [0057]

[Effect of the Invention] Since it is considered as the structure equipped with the specific record film containing the compound of specific structure on a substrate, the optical information record medium of this invention has the sensibility and the reflection factor sufficient as an object for DVD-R which uses the laser light near 635nm especially to laser light 700nm or less, and is used suitable for the high density record which is high, and can be recorded and the solubility to solvents, such as tetrafluoro propanol (TFP), can reproduce. Moreover, this coloring matter is comparatively cheap, a molar extinction coefficient is still higher, since it excels in film production nature and lightfastness, control of thickness is easy and utility value is high also from the point of lowering cost.

[Translation done.]